



Bay Area Base Cleanup Is Low-Tech, High Anxiety

Amid a huge cluster of closing bases, San Francisco's dilapidated Navy shipyard comes clean. But a politically driven schedule and complaints of environmental racism militate against the use of more exotic cleanup technologies.

Charges of environmental racism by neighbors of the former Hunters Point Naval Shipyard in San Francisco have gotten as sticky as the site's abandoned waste oil pond. Technology dilemmas and political squabbles further complicate the estimated \$390-million effort to clean up and reuse the tainted 500-acre site--a microcosm for how the Bay Area is facing restoration and redevelopment of the nation's largest cluster of closing military bases on some of its most scenic and valuable real estate.

``Within the Navy, this project at Hunters Point is scoped out as the most costly," says Richard E. Powell, project manager at the regional Naval Facilities Engineering Command in San Bruno, Calif. It is also the most controversial. ``Community relations is a big part of the overall remedy," he adds. Military bureaucrats are unaccustomed to dealing with ambitious local politicians and angry citizens. ``You talk about culture shock," says Navy spokesman Jeff Young. Although located in a region renowned for high technology, cleanup of Hunters Point and other Bay Area bases has so far remained a largely low-tech operation. But challenges remain nonetheless over such issues as how deep to excavate and on which residential streets to drive landfill-bound trucks. CATASTROPHIC Covering a total of 11,000 dry acres, 13 of the Bay Area's 14 bases are closing altogether or ``realigning" for other federal uses, forcing the loss of 51,000 civilian and military jobs (see map, opposite page). ``It is hard to imagine a situation more catastrophic in its social and economic impact in the aggregate to the Bay Area," fretted the Bay Planning Coalition in 1994. The region is among the hardest hit in a state set to lose significant military acreage. Between 1988 and 1995, at least 29 of California's 63 major Army, Navy and Air Force bases were targeted for closure or realignment by the federal Base Realignment and Closure Commission (BRAC) and its predecessor agency. All told, the closures eliminated 102,000 jobs. BRAC decided to close Hunters Point in 1991, 17 years after the Navy decommissioned the shipyard that had operated since the 1860s. By World War II, it had grown to nearly 500 acres, was one of the nation's largest dry docks and employed nearly 17,000 workers. Among those was a large contingent of African-Americans attracted by steady, high-paying jobs. Many still live in the community that sprung up around the base and have been angered by the decline in the base's fortunes and revelations of its toxic condition. Activists complain that neighbors who want more information about contaminants and cleanup plans are struggling to make sense of jargon-filled reports--88 volumes so far--and are clamoring for more outreach from Navy officials. ``I don't feel they're doing enough to involve the community," complains activist Dorothy M. Peterson. Many residents--including children who sneak past the shipyard's guardhouse to play--remain unaware of the site's toxicity, she says.

From 1976 to 1986, the Navy tried to keep the shipyard functioning by leasing most of it to a ship repair company, which was later sued and fined for illegal dumping of waste oil and polychlorinated biphenyls

(PCBs). In 1989, the U.S. Environmental Protection Agency listed the entire shipyard as a federal Superfund cleanup site. Today some businesses operate at the least toxic locations. Artists and caterers lease seven of the shipyard's 27 light-industrial buildings at below-market rates. And at the huge dry dock, a metals-recycler dismantles Navy ships. BAY AREA BOOM Beyond the Bayview-Hunters Point community, most of the BayArea enjoys tremendous prosperity today with overall unemployment of just 3.5%. More homes sold in June than at any time since 1988, despite a median price of \$279,000. In this heated market, real estate developers see opportunities to build mixed-used residential and commercial communities at the closing bases, most with picture postcard views of the bay.

Local politicians and officials also want to turn the bases into generators of property taxes and jobs. Vallejo, a mostly blue-collar city, plans more than \$1 billion worth of development at the former Mare Island Naval Shipyard (ENR 6/30/97 p.15). In Oakland, the port plans to convert the Navy's former Fleet and Industrial Supply Center into an intermodal terminal complex costing as much as \$560 million (ENR 2/16 p. 15). Nearby, at the former Naval Air Station Alameda, the Oakland-based East Bay Conversion and Reinvestment Commission announced a \$1-million federal grant last month to offer loans to displaced workers to start small businesses at the base, which once employed 17,600.

One of the most unusual revenue-generating schemes for a former base involves plans for the Presidio, an Army facility that became the first U.S. national park in an urban setting in 1994. It needs an estimated \$293 million for building renovation and infrastructure improvements, and now operates on \$25 million a year in federal funds. Unlike other national parks, the Presidio must become self-supporting. Otherwise, its spectacular grounds on bluffs overlooking the Golden Gate Bridge could be parceled off by 2013. The public-private Presidio Trust plans to offer up to 1.7 million sq ft of commercial space for lease by the end of the year.

“We are trying to accelerate environmental cleanup by the Army,” says Erica Sothworth, a trust spokeswoman. Contending that the landfills contain nothing worse than municipal waste and construction debris, the Army proposed last year leaving the landfills in place with long-term monitoring. Critics including the Sierra Club want them dug up and hauled away. “If we excavate all landfills because that's the politically correct thing to do, that could be \$50 million,” compared to \$25 million to \$35 million for a risk-based solution based on science, counters Bruce A. Handel, project manager in the Corps of Engineers' Sacramento office. Currently reevaluating what to do, the Army plans to release a draft remedial action plan by next January, remediation options include either dig-and-haul or capping the landfills, perhaps with the installation of an elaborate water collection system to protect groundwater. The Sierra Club also opposes a plan backed by San Francisco Mayor Willie L. Brown Jr. (D) and approved by city voters in June to reserve base housing for low-income residents.

Stunning views from the former Treasure Island naval station between Oakland and San Francisco also beckon. Its hangars have already been turned into soundstages for Hollywood productions. Real-life intrigue focuses again on Brown, who pushed a bill through the legislature to obtain sole power to name members of the local authority that oversees redevelopment. A civil grand jury complained last month that Brown's concentration of power hampers reuse plans. But even as local officials continue to squabble, there may be less of a site to squabble over. Treasure Island, which was dredged from the bay in the late 1930s as the once-intended site for San Francisco's airport, continues to sink from its original height of 14 ft. The dissolving island now rises just 9 ft above sea level, with costly geotechnical stabilization required.

At Hunters Point, the dredged fill appears to be stable, but cleanup and redevelopment plans remain much less cohesive. Brown, who has close ties to the neighborhood, wants a string of megaprojects along the

waterfront, linked by a proposed light-rail system. Already, a new ballpark located between the community and San Francisco's financial district is set to open in 2000. Brown also wants a new football stadium and a megamall and he is pushing for a mixed-use complex on a former railyard, and an even larger, \$5-billion mixed-use complex at the shipyard. Next to the shipyard, Pacific Gas & Electric Co's aging and polluting 423-Mw Hunters Point Power Plant will close, as Brown announced last month in response to local complaints of environmental injustice.

Political pressure to get the shipyard shipshape promptly is leaving the Navy little time to try out innovative cleanup technology. The service plans to complete its cleanup in 2008. Including the work at Hunters Point, the Navy plans to spend \$1.2 billion from 1992 to 2005 on closing and cleaning up nine BayArea bases, aiming to complete most of the work before BRAC legislation expires in 2001. Cleanup spending on local Navy bases since 1992 totals \$267 million, most for site characterization.

More than 75% of the \$1.2 billion is projected to go for actual construction activities, mostly conventional treatments such as dig-and-haul, pump-and-treat, soil-vapor extraction and bioremediation. Funding also covers mundane chores such as scraping lead paint from base housing, steam cleaning storm sewers and chiseling encrusted sediments from culverts around Hunters Point's huge dry dock. Of the total remediation dollars for Bay Areabases, only about 5% is planned for innovative technologies. ``Certainly, we'd like to see something in that range," says Henry C. Gee, environmental programs manager in the Navy's regional office. In the current rush to convert bases to civilian use, Navy consultants see more opportunities to use innovative technologies for groundwater monitoring and treatment than for treating soil that often can be hauled away more quickly and cheaply.

Earlier this year, the Navy's regional office created seven positions for ``remedial technical specialists for alternative strategies and environmental costs." The new staffers still need time to evaluate which innovative technologies to use, if any, says Kenneth H. Spielman, one of the recent hires. But he touts options such as a ``funnel-and-gate" groundwater cleanup process developed by the University of Waterloo in Ontario as an in situ alternative to pump-and-treat. At the former Naval Air Station Alameda, sheet piles ``funnel" contaminated groundwater into cut-and-cover chambers. One chamber contains iron filings to detoxify solvents; another contains microbes to consume hydrocarbons. **MAGIC BULLETS?** The push for an environmental magic bullet dates back to the early 1990s, when California was in the throes of recession and politicians clamored for innovative basecleanup technologies to jumpstart redevelopment. But progress has been slow. Bay Area redevelopment proponents formed the BayArea Defense Conversion Action Team (BADCAT) in 1994, which created what was described as the nation's first public-private regional forum to demonstrate new remediation technologies. Vendors typically pay the costs of conducting technology tests and generating reports. BADCAT helps fast-track required reviews by the myriad government agencies. But Navy officials and consultants say that BADCAT came on the scene too late to help meet current base-reuse schedules. ``I can't say we have expedited cleanups in the Bay Area through the Environmental Technology Partnership," admits program coordinator Amber Evans.

Last year, Oakland-based BADCAT conducted its first four new technology demonstrations, the first two at Hunters Point. Neighbors who attended liked the show-and-tell, but remained skeptical that anything except dig-and-haul could remove soil contamination. ``It was very difficult to sell to the community that it would be cleaned up," says local resident Jill Fox, a member of the shipyard's Restoration Advisory Board.

At a Hunters Point scrap yard for electrical equipment and lead-acid batteries, BADCAT demonstrated use of an on-site laboratory to analyze metal contaminants in soil. Developed by Onsite Environmental

Laboratories Inc., Fremont, Calif., the mobile lab works with so-called "energy dispersive X-ray fluorescence" rather than hazardous wet chemicals. BADCAT also used Hunters Point as a test bed for a volume-reducing alternative to the costly hauling and landfilling of contaminated soil. The alternative, a way to wash excavated soil, costs about 75% less than mechanically-intensive soil washing, according to ChemTech Analysis Inc., the research arm of civil engineer Klohn-Crippen Consultants Ltd., Vancouver, B.C. With techniques borrowed from mineral processing and wastewater treatment, ChemTech uses a patented fluidized bed classifier to scour the soil and leach out hydrocarbons and metals. The pilot-scale test cost approximately \$30,000. The firm next year plans to upgrade the process to a full-scale, 825-ton-per-day system for a private client, with \$2 million in venture capital. **BLANKET APPROACH** After experimenting at Hunters Point, BADCAT went to Mare Island to test an in-situ thermal desorption technology developed by TerraTherm Environmental Services Inc., an affiliate of Shell Technology Ventures Inc., The Woodlands, Texas. In the process, thermal blankets and wells heat soil electrically to destroy volatile and semi-volatile organic compounds. (ENR 2/23 p. 17). And at the former Alameda naval air station, BADCAT oversaw a demonstration of electrokinetic technology developed by Geokinetics International, Berkeley, Calif., that uses electrodes to attract heavy metals in soils. BADCAT now plans to oversee demonstrations of technologies for groundwater monitoring, lead paint abatement at base housing, and remediation of lead-laden soil. It recently received 13 pre-proposals and plans to select finalists in November.

Today at Hunters Point, crews on excavators and loaders dig up contaminated plots to depths of 7 ft, under the supervision of International Technology Corp. The Pittsburgh-based environmental firm manages cleanup at the site and other Navy facilities in California and Nevada under a five-year \$200-million cost-plus contract awarded in 1994 and a \$250-million follow-on award in June. "Swift and innovative are not necessarily terms that are compatible with each other," says IT project manager P. Donald Marini.

The Navy plans to wrap up enough dig-and-haul efforts by early next year to start turning over remediated parcels to San Francisco. Construction on roughly 200 Hunters Point acres could start in 2000. In response to a request for qualifications from developers, the San Francisco Redevelopment Agency received proposals from four teams in June; the city plans to choose one next month.

Anxious to make deals before the current real estate market turns south, San Francisco might press the Navy for a so-called "dirty transfer" of the rest of the shipyard. Under this scheme, the Navy would provide the city and its eventual developer with funds to complete some of the remediation if EPA and the California Dept. of Toxic Substances Control approve. "We would like to have some flexibility about the cleanup," says Byron A. Rhett, the redevelopment agency's senior project manager. Dirty transfers, once prohibited by the Superfund law, became permissible under the 1997 National Defense Authorization Act, which California Gov. Pete Wilson (R) took advantage of last year to approve only the second early transfer of a contaminated federal property in the U.S. But local Navy officials are skeptical that regulators will approve use of the approach at Hunters Point.

The shipyard's worst contamination includes buried surprises in a landfill. "That's the one no one wants to touch," says Valerie E. Crooks, International Technology's Martinez, Calif.-based program manager. Sheet piles now keep groundwater from draining into that landfill and into the bay, while consultants and the Navy study what to do next. Possible alternatives include more sheet piles, some excavation and disposal, some bioslurping and thermal desorption, use of ChemTech's soil-washing method, and a clay-and-geotextile cap covering 30 acres total over the landfill and nearby oil pond. While driving sheet piling around the landfill last year, IT's construction crews twice accidentally struck buried canisters of chlorine once believed intended for purifying water. The mishaps released small amounts of potentially

lethal chlorine gas, but IT's workers were already wearing protective gear. The often less-than-ideal working conditions and booming BayArea construction market are making it tough to find and keep workers particularly those wearing ``rainsuits" and respirators. ``There's a real shortage of craft laborers," says Crooks.

IT crews began excavating soil last month at the Hunters Point parcel that contains a messy mix of PCBs, volatile organic compounds from solvents, and polycyclic aromatic hydrocarbons from the degradation of petroleum, plus heavy metals. Mercury, which possibly washed into the bay during 19th-Century hydraulic mining of Sierra Nevada gold, ended up in some dredge material used to expand Hunters Point during World War II. Engineers recently considered using several remedies such as thermal desorption for heating up and driving off the gases in the volatile organics; they also considered stabilizing the metals in a concrete mix.

But the Navy acquiesced to community concerns. ``The community, of course, doesn't want you to leave anything on site. They want it pristine," says James M. Sickles, the Hunters Point project manager in the San Francisco office of Tetra Tech EM Inc., the firm responsible for engineering cleanups of the Navy's Bay Areabases. ``The issue of environmental racism has been brought up several times." The firm is proposing use of in situ thermal desorption and oxygen-releasing compounds on parcels whose contaminants are too difficult to excavate but is shying away from mounting an arsenal of exotic technologies. ``I think the politics of these base closings makes it very difficult to do," Sickles says.

HAMILTON ARMY AIRFIELD

Original Owner: Army, Navy and General Services Administration

1,624 acres

Total remediation: \$46 million

Still to be spent: \$11.6 million

Construction completion date: 2000

POINT MOLATE NAVAL

FUEL DEPOT

Original Owner: Navy

423 acres total, includes 100 acres

underwater

Total remediation: \$68 million

Still to be spent: \$60 million

Construction completion date: 2003

OAKLAND ARMY BASE

Original Owner: Army

422 acres

Total remediation: \$35 million

Still to be spent: \$32 million

Construction completion date: 2003

MARE ISLAND

NAVAL SHIPYARD

Original Owner: Navy

5,252 acres total, includes 3,614 acres underwater

Total remediation: \$216 million

Still to be spent: \$144 million

Construction completion date: 2002

TREASURE ISLAND

NAVAL STATION

Original Owner: Navy

1,080 acres total, includes 558 acres

underwater

Total remediation: \$79 million

Still to be spent: \$62 million

Construction completion date: 2002

EAST FORT BAKER

Original Owner: Army

332 acres

Total remediation: \$5 million

Still to be spent: \$3.5 million

Construction completion date: 2002

CALIFORNIA BASE

REALIGNMENT AND

CLOSURE SITES

29 total, 13 in the Bay Area

PRESIDIO OF SAN FRANCISCO

Original Owner: Army

1,480 acres

Total remediation: \$160 million

Still to be spent: \$50 million

Construction completion date: 2005

OAKLAND FLEET AND

INDUSTRIAL SUPPLY CENTER

Original Owner: Navy

676 acres total, includes 108 acres

underwater

Total remediation: \$34 million

Still to be spent: \$28 million

Construction completion date: 2002

HUNTERS POINT

NAVAL SHIPYARD

Original Owner: Navy

936 acres total, includes 443 acres

underwater

Total remediation: \$390 million

Still to be spent: \$289 million

Construction completion date: 2008

NAVAL AIR STATION, ALAMEDA

Original Owner: Navy

2,675 acres total, includes 1,115 acres
underwater

Total remediation: \$169 million

Still to be spent: \$102 million

Construction completion date: 2002

NAVAL HOSPITAL, OAKLAND

Original Owner: Navy

183 acres

Total remediation: \$2.7 million

Construction completion date: 1998

MOFFETT FIELD AIR STATION

Original Owner: Navy

3,700 acres

Total remediation: \$83 million

Still to be spent: \$34.5 million

Construction completion date: 2002

ONIZUKA AIR STATION

Original Owner: Air Force

23 acres total

No anticipated environmental cleanup

Sources--Bay Area map: Bay Area Defense Conversion Action Team;
California map: California Governor's Office of Planning and Research;
Site Information: Naval Facilities Engineering Command, San Bruno, Calif.;
U.S. Army Corps of Engineers, Sacramento, Calif.; Oakland Army Base

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